

P-17

Tannehill Beardsley #1 777
SE/4-NE/4 Sec 25-Twp 4N-R 2W
Maricopa County, No. Permit

County Maricopa

Area _____

Lease No. _____

Well

Name Tannehill Beardsley #1

Location SE NE Sec 25 Twp 4N Range 2W Footage est. 1980 ft 660 ft

Elev 11305 Gr _____ KB _____ Date _____ Spud _____ Completed _____ Total _____

Contractor: McNichols Dam 7/2 Abandon _____ Depth 3350 Approx. Cost \$ _____

Casing Size _____ Depth _____ Cement _____

Drilled by Rotary _____
Cable Tool _____

Production Horizon _____

Initial Production D&A

REMARKS _____

Elec. _____ Sample Log X
Logs _____ Sample Descrip. X
Applic _____ Plugging _____ Completion _____ Sample Set _____
to Plug _____ Record _____ Report _____ Cores _____

Water well - accepted by _____

Bond Co. _____
& No. _____

Bond Am't \$ _____ Cancelled _____ Date _____ Organization Report _____

Filing Receipt _____ Dated _____ Well Book _____ Plat Book _____

Loc. Plat _____ Dedication _____

PERMIT NUMBER none

Date Issured _____

#7-17

O&GCC Incl. No. 7-17

Tanwchill, Op. Beardsley #1, Located SE, NE, Sec. 25, T4N, R2W,
Maricopa Co. Yuma District, State of Arizona

Operations suspended in June 1923. Well was abandoned at depth of 3350 feet. Rig and all equipment removed. Well located in broad alluvial valley with no evidence of structure. Well visited in April 1928. (Scout Report)

Condensed log of Beardsley #1

0	-	746	sand, clay & gravel
746	-	1743	clay, & water shale
1743	-	1745	brown sandstone
1745	-	1930	clay & brown sand
1930	-	1935	brown sandstone
1935	-	2208	clay
2208	-	2210	gray sand showing globules of oil
2410	-	2430	sand and sandy lime
2430	-	2518	lime
2518	-	2540	brown sand showing light oil
2540	-	3040	sand, sandstone with streaks of shale
3040	-	3050	hard blue lime

rest of log missing

3350 T.D.

RECEIVED

JAN 1928
O&GCC

846- 905 - Shale and heavy clay	2,200 - 2,210 - Reddish gray clay
905- 906 - Shale, slate, and clay	2,313 - 2,374 - Gray sandstone and
906- 906 - Sand - 7" showing	2,374 - 2,497 - streaks of clay and
906-1,028 - Shale and clay	oil smears on tools
1,028-1,064 - Gray sandstone - trace oil	2,497 - 2,668 - Sand with trace of
1,064-1,110 - Clay	2,668 - 2,690 - Clay and gray sandstone
1,110-1,117 - White silica sandstone	2,690 - 2,698 - Water sand
1,117-1,300 - Coarse gray sandstone	2,698 - 2,768 - Gray sandstone
1,300-1,349 - Clay	2,768 - 2,769 - Clay and sand
1,349-1,410 - Sandstone	
1,410-1,505 - Sandstone	

Beardsley No. 1. SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 25, T. 4 N., R. 2 W., G. & S.R.M.
Operations suspended in June, 1923. Well was abandoned at depth of 3,350
feet. Rig and all equipment removed. Well located in broad alluvial valley
with no evidence of structure. Well visited April 11, 1928.

Condensed log of Beardsley No. 1.

7-17

0 - 746 Sand, clay gravel
746 - 1,743 Clay and water sands
1,743 - 1,745 Brown sandstone
1,745 - 1,930 Clay and brown sand
1,930 - 1,935 Brown sandstone
1,935 - 2,208 Clay
2,208 - 2,210 Gray sand showing globules of oil
2,210 - 2,430 Sand and sandy lime
2,430 - 2,518 Lime
2,518 - 2,540 Brown sand, showing light oil
2,540 - 3,040 Sand, sandstone with streaks of shale
2,040 - 3,050 Hard blue lime

Log of Beardsley No. 1
(Cont'd)

3,050 - 3,115 Sandstone
3,115 - 3,122 Blue lime
3,132 - 3,180 Sandy lime and shale
3,180 - 3,252 Alternate streaks of shale and lime
3,252 - 3,280 Black shale saturated with oil, showing some gas
3,280 - 3,350 Sandy shale, sandstone, and lime

Locations of wells of lesser depths in the Beardsley-Wadaburg area
are as follows:

SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 28, T. 5 N., R. 2 W., G. & S.R.M.
Drilled with portable drilling machine to depth of 417 feet in 1921.

SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 26, T. 5 N., R. 2 W., G. & S.R.M.
Drilled with portable drilling machine to depth of 365 feet in 1920.

NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 19, T. 5 N., R. 2 W., G. & S.R.M.
Drilled to depth of 500 feet in 1921.

Center of NW $\frac{1}{4}$, Section 13, T. 5 N., R. 3 W., G. & S.R.M.
Drilled to depth of 604 feet in 1921.

NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 14, T. 5 N., R. 3 W., G. & S.R.M.
Drilled to depth of 500 feet in 1921.

Area visited April 11, 1928)

YAVAPAI COUNTY:

H-7-17

Tannehill Beardsley f. 1 -

- 2 -

Beardsley No. 1. SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 25, T. 4 N., R. 2 W., G. & S. R. M. Operations suspended in June, 1923. Well was abandoned at depth of 3,350 feet. Rig and all equipment removed. Well located in broad alluvial valley with no evidence of structure. Well visited April 11, 1923.

Condensed Log of Beardsley No. 1.
(Furnished by L. B. Tannehill, Phoenix, Arizona)

0 -	746	Sand, clay gravel
746 -	1,743	Clay and water sands
1,743 -	1,745	Brown sandstone
1,745 -	1,930	Clay and brown sand
1,930 -	1,935	Brown sandstone
1,935 -	2,208	Clay
2,208 -	2,210	Gray sand showing globules of oil
2,210 -	2,430	Sand and sandy lime
2,430 -	2,518	Lime
2,518 -	2,540	Brown sand, showing light oil
2,540 -	3,040	Sand, sandstone with streaks of shale
3,040 -	3,050	Hard blue lime
3,050 -	3,115	Sandstone
3,115 -	3,123	Blue lime
3,123 -	3,180	Sandy lime and shale
3,180 -	3,252	Alternate streaks of shale and lime
3,252 -	3,280	Black shale saturated with oil, showing some gas
3,280 -	3,350	Sandy shale, sandstone, and lime

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Locations of wells of lesser depths in the Beardsley-Madaburg area are as follows:

SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 25, T. 5 N., R. 2 W., G. & S. R. M.
Drilled with portable drilling machine to depth of 417 feet in 1921.

SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 25, T. 5 N., R. 2 W., G. & S. R. M.
Drilled with portable drilling machine to depth of 345 feet in 1920.

NE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 19, T. 5 N., R. 2 W., G. & S. R. M.
Drilled to depth of 500 feet in 1921. Elev 1615 Top

Center of NW $\frac{1}{4}$ Section 13, T. 5 N., R. 2 W., G. & S. R. M.
Drilled to depth of 606 feet in 1921. Elev 1790 Top

NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 14, T. 5 N., R. 2 W., G. & S. R. M.
Drilled to depth of 500 feet in 1921. Elev 1700 Top

(Area visited April 11, 1923)

USGS - Cantfield Report, 5-1-28.

MARICOPA COUNTY MUNICIPAL WATER CONSERVATION
DISTRICT NUMBER ONE
TANNEHILL CO., BEARDSLEY #1
LOG OF WELL 2-30 (old oil well)
SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 25, T4N, R2W, Maricopa County, Arizona

Water standing @ 138' after pumping
Drawdown to 183
1/4/38 Water level 128.3
10/6/38 Water level 129.3

Temp. of water 114°

TD 3350

In charge of Drilling - From 0-1010 Graham, Glendale, Arizona
From 1010-3350 R. G. Fleming, Alhambra, California.

0	-	6	Caliche & earth	1930	-	1935	Brown sand
6	-	20	Sandy-some clay	1935	-	1955	Red gumbo
20	-	50	Hard caliche	1955	-	1975	Red sandy clay
50	-	95	Sandy clay	1975	-	1995	Red gumbo
95	-	137	Hard caliche & cobble	1995	-	2010	Red clay
				2010	-	2050	Red gumbo
137	-	195	Sandy clay-water	2050	-	2105	Red clay
195	-	238	Water sand-fine	2105	-	2110	Red sand
238	-	340	Caliche	2110	-	2140	Red gumbo
340	-	375	Caliche	2140	-	2160	Black gumbo
375	-	394	Sandy clay	2160	-	2170	Red sandy clay
394	-	405	Water bearing sand	2170	-	2208	Red gumbo
405	-	425	Red clay	2208	-	2210	Gray sand showing globule oil
425	-	489	Clean water sand				
489	-	516	Water sand	2210	-	2315	Red clay
516	-	524	Caliche	2315	-	2395	Red sand
524	-	572	Sandy clay	2395	-	2400	Blue lime
572	-	577	Sand rock	2400	-	2415	Gray sandy lime
577	-	595	Sandy clay	2415	-	2420	White lime
595	-	620	Caliche	2420	-	2430	Gray sandy lime
620	-	630	Water sand	2430	-	2435	White lime
630	-	673	Caliche	2435	-	2450	Yellow lime
673	-	710	Water sand	2450	-	2465	Red lime
710	-	738	Clay wet	2465	-	2518	Yellow lime
738	-	746	Water sand	2518	-	2540	Brown sand-show oil
746	-	755	Brown clay	2540	-	2550	Black sand
755	-	773	Brown clay	2550	-	2580	Brown sand
773	-	820	Red clay	2580	-	2675	Gray sand
820	-	830	Red clay & sand	2675	-	2700	Brown sand
830	-	850	Red clay	2700	-	2720	Gray sand
850	-	905	Red clay	2720	-	2755	Black sandy shale
905	-	1010	Red clay	2755	-	2765	Brown sandstone
1010	-	1071	Red clay	2765	-	2810	Red rock
1071	-	1090	Red clay, sandy	2810	-	2828	Black sand and shale
1090	-	1140	Red clay & wash	2828	-	2850	Red rock
1140	-	1202	Red sandy clay	2850	-	2880	Black sand
1202	-	1208	Red clay	2880	-	2910	Red rock trace iron
1208	-	1228	Gray water sand	2910	-	2945	Brown rock-trace iron
1228	-	1325	Red clay	2945	-	2960	Gray sandstone
1325	-	1327	Gray water sand	2960	-	2980	Brown sandstone
1327	-	1343	Red clay	2980	-	2995	Gray sandstone
1343	-	1346	Gray water sand	2995	-	3015	Blue lime hard
1346	-	1460	Red clay & wash	3015	-	3040	Brown sandstone
1460	-	1480	Red sandy clay	3040	-	3050	Blue lime hard
1480	-	1570	Red gumbo	3050	-	3070	Brown sandstone
1570	-	1650	Black gumbo	3070	-	3090	Red rock
1650	-	1690	Red gumbo	3090	-	3115	Red sandstone
1690	-	1720	Red clay	3115	-	3122	Blue lime
1720	-	1743	Red sandy clay	3122	-	3135	Red sandstone
1743	-	1745	Brown sandstone	3135	-	3155	Gray sandy lime
1745	-	1760	Red clay	3155	-	3180	Red shale and lime
1760	-	1763	Brown sandstone	3180	-	3183	Blue lime
1763	-	1798	Red clay	3183	-	3195	Red shale
1798	-	1804	Brown sand	3195	-	3220	Gray lime
1804	-	1885	Red clay	3220	-	3252	Gray sandy lime
1885	-	1892	Brown sand	3252	-	3280	Black shale saturated with oil showing some gas
1892	-	1930	Red gumbo				

—over—

Tannehill Co., Beardsley #1
Located SE $\frac{1}{4}$ NE $\frac{1}{4}$ of Sec. 25, Twp. 4-N, Rge. 2-W.
Maricopa County, Arizona

3280 - 3295	Brown sandy shale
3295 - 3300	Brown sandstone
3300 - 3320	Black shells showing lime
3320 - 3330	Black sand
3330 - 3334	Black lime
3334 - 3350	Brown sand

Summary of Sample Log

0 - 500	Sand - clay - gravel
500 - 1300	Clay & water sands
1300 - 1750	Brown sand
1750 - 1850	Clay & brown sand
1850 - 1940	Brown sand
1940 - 2100	Clay
2100 - 2210	Gray sand showing globules of oil
2210 - 2300	Sand and Sandy lo
2300 - 2550	Brown sand showing light oil
2550 - 2800	Sand and sa with streaks of sh
2800 - 3050	Bd blue so
3050 - 3120	Blue lo
3120 - 3150	Sandy lo & sh
3150 - 3200	Alternate streaks of sh & lo
3250 - 3280	Black sh saturated with oil - some gas
3280 - 3350	Sandy sh, sa & lo

Total Depth 3350

MARICOPA COUNTY MUNICIPAL WATER CONSERVATION
DISTRICT NUMBER ONE
TANNERHILL CO. BEARDSLEY #1
LOG OF WELL 2-30 (old oil well)

C
O
P
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SE NE SEC 25-T4N-R2W, Maricopa County
Water standing @ 138' after pumping Temp. of water 114°
Drawdown to 183
1/4/38 Water level 128.3
10/6/38 " 129.3

In charge of Drilling - From 0-1010 Graham, Glendale, Arizona
From 1010-3350 R. G. Fleming, Alhambra, California.

0-6	Caliche & earth	1202-1208	Red clay
6-20	Sandy-some clay	1208-1228	Gray water sand
20-50	Hard caliche	1228-1325	Red clay
50-95	Sandy clay	1325-1327	Gray water sand
95-137	Hard caliche and cobble	1327-1343	Red clay
137-195	Sandy clay - water	1343-1346	Gray water sand
195-238	Water sand - fine	1346-1460	Red clay and wash
238-340	Caliche	1460-1480	Red sandy clay
340-375	Caliche	1480-1570	Red Gumbo
375-394	Sandy clay	1570-1650	Black Gumbo
394-405	Water bearing sand	1650-1690	Red Gumbo
405-425	Red clay	1690-1720	Red clay
425-489	Clean water sand	1720-1743	Red sandy clay
489-516	Water sand	1743-1745	Brown sandstone
516-524	Caliche	1745-1760	Red clay
524-572	Sandy clay	1760-1763	Brown sandstone
572-577	Sand rock	1763-1798	Red clay
577-595	Sandy clay	1798-1804	Brown sand
595-620	Caliche	1804-1885	Red clay
620-630	Water sand	1885-1892	Brown sand
630-673	Caliche	1892-1930	Red Gumbo
673-710	Water sand	1930-1935	Brown sand
710-738	Clay wet	1935-1955	Red Gumbo
738-746	Water sand	1955-1975	Red sandy clay
746-755	Brown clay	1975-1995	Red Gumbo
755-773	Brown clay	1995-2010	Red clay
773-820	Red clay	2010-2050	Red Gumbo
820-830	Red clay and sand	2050-2105	Red clay
830-850	Red clay	2105-2110	Red sand
850-905	Red clay	2110-2140	Red Gumbo
905-1010	" "	2140-2160	Black Gumbo
1010-1071	" "	2160-2170	Red sandy clay
1071-1090	" " sandy	2170-2208	Red Gumbo
1090-1140	" " & wash	2208-2210	Gray sand showing globule oil
1140-1202	Red sandy clay	2210-2315	Red clay

Continued - Log of well 2-30

2315-2395	Red sand	3155-3180	Red shale and lime
2395-2400	Blue lime	3180-3183	Blue lime
2400-2415	Gray sandy lime	3183-3195	Red shale
2415-2420	White lime	3195-3220	Gray lime
2420-2430	Gray sandy lime	3220-3252	Gray sandy lime
2430-2435	White lime	3252-3280	Black shale saturated with oil showing some gas
2435-2450	Yellow lime	3280-3295	Brown sandy shale
2450-2465	Red lime	3295-3300	Brown sandstone
2465-2518	Yellow lime	3300-3320	Black shells showing lime
2518-2540	Brown sand - show oil	3320-3330	Black sand
2540-2550	Black sand	3330-3334	Black lime
2550-2580	Brown sand	3334-3350	Brown sand
2580-2678	Gray sand		
2678-2700	Brown sand		
2700-2720	Gray sand		
2720-2755	Black sandy shale		
2755-2765	Brown sandstone		
2765-2810	Red rock		
2810-2828	Black sand and shale		
2828-2850	Red rock		
2850-2880	Black sand		
2880-2910	Red Rock trace iron		
2910-2945	Brown rock-trace iron		
2945-2980	Gray sandstone		
2980-2980	Brown sandstone		
2980-2995	Gray sandstone		
2995-3015	Blue lime hard		
3015-3040	Brown sandstone		
3040-3050	Blue lime hard		
3050-3070	Brown sandstone		
3070-3090	Red rock		
3090-3115	Red sandstone		
3115-3122	Blue lime		
3122-3135	Red sandstone		
3135-3155	Gray sandy lime		

Summary of Sample Log on Tannehill Co., Beardsley #1 located in

SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 25, T. 4 N., R. 2 W., Maricopa County

0	- 500	Sand - clay - gravel
500	-1300	Clay & water sands
1300	-1750	Brown sd.
1750	-1850	Clay & brown sd.
1850	-1940	Brown sd.
1940	-2100	Clay
2100	-2210	Gray sand showing globules of oil
2210	-2300	Sand and sandy lo
2300	-2550	Brown sand showing light oil
2550	-2800	Sand and sa with streaks of sh
2800	-3050	Ed blue so
3050	-3120	Blue lo
3120	-3150	Sandy lo & sh
3150	-3200	Alternate streaks of sh & lo
3200	-3280	Black sh saturated with oil - some gas
3280	-3350	Sandy sh, sa & lo

Total Depth 3350

No permit

(B-4-2) 25 4a

Log of Tannhill #1 Beardsley well, SE NE 25-^{4N.} 4a-2W, Maricopa Co., Ariz.

Surface	Gila Conglomerate ?
746	Sand, clay, gravel
1743	Clay and water sands
1745	Brown sand
1930	Clay and brown sand
1936	Brown sand
2208	Clay
2210	Gray sand showing globules of oil
2430	Sand and sandy limestone
2518	Limestone
2540	Brown sand showing light oil
3040	Sand, sandstone, with streaks of shale
3050	Hard blue limestone
3115	Sandstone
3122	Blue limestone
3150	Sandy limestone and shale
3252	Alternate streaks of shale and limestone
3280	Black shale saturated with oil showing some gas,
3350	Sandy shale -- sandstone and limestone.

T. D. Dry and abandoned

17
No permit

MARICOPA COUNTY MUNICIPAL WATER CONSERVATION
DISTRICT NUMBER ONE
TANNEHILL CO. BEARDSLEY #1
LOG OF WELL 2-30 (old oil well)

C
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P
Y

Water standing @ 138' after pumping
Drawdown to 183
1/4/38 Water level 128.3
10/6/38 " " 129.3
Temp. of water 114°

In charge of Drilling - From 0-1010 Graham, Glendale, Arizona
From 1010-3350 R. G. Fleming, Alhambra, California.

0-6	Caliche & earth	1202-1208	Red clay
6-20	Sandy-some clay	1208-1228	Gray water sand
20-50	Hard caliche	1228-1325	Red clay
50-95	Sandy clay	1325-1327	Gray water sand
95-137	Hard caliche and cobble	1327-1343	Red clay
137-195	Sandy clay - water	1343-1346	Gray water sand
195-238	Water sand - fine	1346-1460	Red clay and wash
238-340	Caliche	1460-1480	Red sandy clay
340-375	Caliche	1480-1570	Red Gumbo
375-394	Sandy clay	1570-1650	Black Gumbo
394-405	Water bearing sand	1650-1690	Red Gumbo
405-425	Red clay	1690-1720	Red clay
425-489	Clean water sand	1720-1743	Red sandy clay
489-516	Water sand	1743-1745	Brown sandstone
516-524	Caliche	1745-1760	Red clay
524-572	Sandy clay	1760-1763	Brown sandstone
572-577	Sand rock	1763-1798	Red clay
577-595	Sandy clay	1798-1804	Brown sand
595-620	Caliche	1804-1885	Red clay
620-630	Water sand	1885-1892	Brown sand
630-673	Caliche	1892-1930	Red Gumbo
673-710	Water sand	1930-1935	Brown sand
710-738	Clay wet	1935-1955	Red Gumbo
738-746	Water sand	1955-1975	Red sandy clay
746-755	Brown clay	1975-1995	Red Gumbo
755-773	Brown clay	1995-2010	Red clay
773-820	Red clay	2010-2050	Red Gumbo
820-830	Red clay and sand	2050-2105	Red clay
830-850	Red clay	2105-2110	Red sand
850-905	Red clay	2110-2140	Red Gumbo
905-1010	" "	2140-2160	Black Gumbo
1010-1071	" "	2160-2170	Red sandy clay
1071-1090	" " sandy	2170-2208	Red Gumbo
1090-1140	" " & wash	2208-2210	Gray sand showing
1140-1202	Red sandy clay		globule oil
		2210-2315	Red clay

Continued - Log of well 2-30

2315-2395	Red sand	3155-3180	Red shale and lime
2395-2400	Blue lime	3180-3183	Blue lime
2400-2415	Gray sandy lime	3183-3195	Red shale
2415-2420	White lime	3195-3220	Gray lime
2420-2430	Gray sandy lime	3220-3252	Gray sandy lime
2430-2435	White lime	3252-3280	Black shale saturated with oil showing some gas
2435-2450	Yellow lime		
2450-2465	Red lime	3280-3295	Brown sandy shale
2465-2518	Yellow lime	3295-3300	Brown sandstone
2518-2540	Brown sand - show oil	3300-3320	Black shells showing lime
2540-2550	Black sand	3320-3330	Black sand
2550-2580	Brown sand	3330-3334	Black lime
2580-2675	Gray sand	3334-3350	Brown sand
2675-2700	Brown sand		
2700-2720	Gray sand		
2720-2755	Black sandy shale		
2755-2765	Brown sandstone		
2765-2810	Red rock		
2810-2828	Black sand and shale		
2828-2850	Red rock		
2850-2880	Black sand		
2880-2910	Red Rock trace iron		
2910-2945	Brown rock-trace iron		
2945-2960	Gray sandstone		
2960-2980	Brown sandstone		
2980-2995	Gray sandstone		
2995-3015	Blue lime hard		
3015-3040	Brown sandstone		
3040-3050	Blue lime hard		
3050-3070	Brown sandstone		
3070-3090	Red rock		
3090-3115	Red sandstone		
3115-3122	Blue lime		
3122-3135	Red sandstone		
3135-3155	Gray sandy lime		

Summary of Sample Log on Tannehill Co., Beardsley #1 located in

SE 1/4 NE 1/4 Sec. 25, T. 4 N., R. 2 W., Maricopa County

0	- 500	Sand - clay - gravel
500	-1300	Clay & water sands
1300	-1750	Brown sd.
1750	-1850	Clay & brown sd.
1850	-1940	Brown sd.
1940	-2100	Clay
2100	-2210	Gray sand showing globules of oil
2210	-2300	Sand and sandy lo
2300	-2550	Brown sand showing light oil
2550	-2800	Sand and sa with streaks of sh
2800	-3050	Bd blue so
3050	-3120	Blue lo
3120	-3150	Sandy lo & sh
3150	-3200	Alternate streaks of sh & lo
3250	-3280	Black sh saturated with oil - some gas
3280	-3350	Sandy sh, sa & lo

Total Depth 3350

No permit

(B-4-2) 25 da

4N.

Log of Tannehill #1 Beardsley well, SE NE 25 4N-2W, Maricopa Co., Ariz.

Surface	Gila Conglomerate ?
746	Sand, clay, gravel
1743	Clay and water sands
1745	Brown sand
1930	Clay and brown sand
1936	Brown sand
2208	Clay
2210	Gray sand showing globules of oil
2430	Sand and sandy limestone
2518	Limestone
2540	Brown sand showing light oil
3040	Sand, sandstone, with streaks of shale
3050	Hard blue limestone
3115	Sandstone
3122	Blue limestone
3180	Sandy limestone and shale
3252	Alternate streaks of shale and limestone
3280	Black shale saturated with oil showing some gas,
3350	Sandy shale — sandstone and limestone.

T. D. Dry and abandoned

17
Mopemut

LOG OF BEARDSLEY WELL NO. 1

Located in Sec. 25, T. 4 N., R. 2 W.

Maricopa County, Arizona

Furnished by L. B. Tannhill.

Feet	to	Feet	
0	"	8	Caliche and Earth.
8	"	20	Sandy and some clay
20	"	50	Hard Caliche
50	"	95	Sandy Clay
95	"	137	Hard Caliche with Cobble
137	"	195	Sandy Clay (struck water).
195	"	238	Water Sand, rather fine, clear.
238	"	340	Caliche
340	"	375	Caliche
375	"	395	Sandy Clay
395	"	405	Water Bearing Sand
405	"	425	Clay (reddish)
425	"	489	Clean sand, water sand.
489	"	516	Water sand
516	"	524	Caliche
524	"	572	Sandy clay
572	"	577	Sand Rock
577	"	595	Sandy Clay
595	"	620	Caliche
620	"	630	Water Sand
630	"	673	Caliche
673	"	710	Water Sand
710	"	738	Clay, wet.
738	"	748	Water sand
748	"	755	Brownish-gray clay
755	"	773	Brown Clay
773	"	820	Red Clay
820	"	830	Red Clay and Sand
830	"	850	Red Clay
850	"	905	" " "
905	"	1010	" " and Wash
1010	"	1071	" " "
1071	"	1090	Red Clay sandy
1090	"	1140	Red Clay and Wash
1140	"	1202	Red Sandy Clay
1202	"	1208	Red Clay
1208	"	1228	Grey water sand
1228	"	1325	Red Clay

[Handwritten signature and notes]

<u>Foot</u>		<u>Foot</u>	
1325	to	1327	Grey water sand
1327	"	1343	Red Clay
1343	"	1346	Gray Water Sand
1346	"	1400	Red Clay and Wash Formation
1400	"	1480	Red Sandy Clay
1480	"	1570	Red Gumbo
1570	"	1650	Black Gumbo
1650	"	1690	Red Gumbo
1690	"	1720	Red Clay
1720	"	1743	Red Sandy Clay
1743	"	1745	Brown Sandstone
1745	"	1760	Red Clay
1760	"	1763	Brown Sandstone
1763	"	1798	Red Clay
1798	"	1804	Brown Sand Soft
1804	"	1885	Red Clay
1885	"	1892	Brown Sand
1892	"	1930	Red Gumbo
1930	"	1935	Brown Sandstone
1935	"	1955	Red Gumbo
1955	"	1975	Red Sandy Clay
1975	"	1995	Red Gumbo
1995	"	2010	Red Clay
2010	"	2050	Red Gumbo
2050	"	2105	Red Clay
2105	"	2110	Red Sand
2110	"	2140	Red Gumbo
2140	"	2160	Black Gumbo
2160	"	2170	Red Sandy Clay
2170	"	2208	Red Gumbo
2208	"	2210	Gray sand showing globules of OIL
2210	"	2315	Red Clay
2315	"	2395	Red Sand
2395	"	2400	Blue Lime
2400	"	2415	Gray Sandy Lime
2415	"	2420	White Lime
2420	"	2430	Gray Sandy Lime
2430	"	2435	White Lime
2435	"	2450	Yellow Lime
2450	"	2465	Red Lime
2465	"	2518	Yellow Lime
2518	"	2540	Brown Sand
2540	"	2550	Black Sand
2550	"	2580	Brown Sand
2580	"	2675	Gray Sand
2675	"	2700	Brown Sand
2700	"	2730	Gray Sand
2720	"	2755	Black Sandy Shale
2755	"	2765	Brown Sandstone

--Showing Light Oil

Feet		Feet	
2785	to	2810	Red Rock
2810	"	2828	Black Sand Streaks of Shale.
2828	"	2850	Red Rock
2850	"	2880	Black Sand
2880	"	2910	Red Rock -Trace of Iron
2910	"	2945	Brown Fine Rock-Trace of Iron
2945	"	2980	Brown Coarse Rock-Trace of Iron.
2980	"	2980	Gray sandstone
2980	"	2998	Brown "
2998	"	3018	Gray Sandstone
3018	"	3040	Brown Sandstone
3040	"	3050	Blue Lime Hard
3050	"	3070	Brown Sandstone
3070	"	3080	Red Rock
3080	"	3118	Red Sandstone
3118	"	3122	Blue Lime
3122	"	3138	Red Sandstone
3138	"	3158	Gray Sandy Lime
3158	"	3180	Red Shale and Lime Shells.
3180	"	3183	Blue Lime
3183	"	3198	Red Shale
3198	"	3220	Gray Lime
3220	"	3252	Gray Sandy Lime
3252	"	3280	Black Shale Saturated with OIL, showing some Gas.
3280	"	3298	Brown Sandy Shale
3298	"	3300	Brown Sandstone.
3300	"	3320	Black Shells showing Lime
3320	"	3330	Black Sand
3330	"	3334	Black Lime
3334	"	3350	Brown Sand

(Signed) R.G.FLEMING

In charge of Drilling

From 0 to 1010
From 1010 to 3380

Graham, Glendale, Arizona
R.G.Fleming, Alhambra, Calif.

PARTIAL LIST OF WELLS DRILLED IN ARIZONA

APACHE COUNTY

1. Hogback Oil Company No. 1. Sec. 24, T. 23N. R. 30E.
340' from N. line, 300' from W. line of NW $\frac{1}{4}$ NW $\frac{1}{4}$
Sec. 24.
 Drilling commenced November 15, 1926.
 Drilling completed May 7, 1927.
 Total Depth 1510', in gray granite.
 No shows recorded.
 Log on file and plotted.
 Located on upthrown fault block South end
 of Defiance Uplift.
2. U. S. Indian Service Water Well, at junction of roads,
South of Window Rock and 2 miles East of St. Michaels.
 T. D. 1795. Surface dips 15-25° E., in Chinle Fm.
 Hole bottomed in Cutler Formation. No shows oil or
 gas.
 Log on file.
 E. flank Defiance Uplift.
3. Zuni Oil Company No. 1 Sec. 6, T. 19N., R. 24E.
T. D. @ 1000 Feet. Start in Chinle, bottomed in
lower Chinle.
 No shows oil and gas on our records.
 No log on file.
 Located on NE flank of so-called Carrizo Anticline.

COCHISE COUNTY

1. Araberger No. 1 SE $\frac{1}{4}$ Sec. 19, T. 15 S., R. 26 E.
Commenced drilling April 3, 1931.
Completed drilling October 28, 1931.
 T. D. 3298'.
 No shows recorded on log.
 Temperature at 3225-35' 110° F.
 Log on file and plotted.
2. Bowie Oil Leasing Syndicate No. 1. SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 16, T. 13 S.,
R. 28 E.
 Commenced * * * * *
 Completed drilling February 1, 1925.
 T. D. 4110'.
 Shows:
 1925-35 sso
 2100-2300 sdy sh, sso
 2670-2700 sdy sh, sso & g
 2950-62 sd, sso & g
 3560 sh, sso & g
 3815-3852-4110 shows oil when tested with
 chloroform also H₂S.
 Log on file and plotted.

3. Funk Benevolent Corp., No. 1 Fee. SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 27, T. 13 S., R. 30 E.

Commenced drilling 1929
Completed - - still drilling Oct. 5, 1938
Depth to date 6440'
Temperature at 2430' - 165°
Temperature at 6400' - 274°.
Shows of oil and gas numerous, beginning at 1730' and occurring at frequent intervals to bottom.
Hole full of water; operators attempting shut-off and swab test.
No correlation of formations available but suggestion is offered that the conglomerate in lower 500' of hole may be basal Cretaceous.
Log on file at 6400'.

4. Southern Pacific Railroad Water Well, Willcox. 1928-30

T. D. 650'.
Produced light oil, kerosene and gasoline; pumper sold 2,800 gallons to local ranchers at 10¢ a gallon.
Well not used since 1930.
Log on file and plotted.

MARICOPA COUNTY

1. Camelback No. 1 NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 30, T. 2 N., R. 4 E.

Drilled 1907.
T. D. 2818'.
Shows numerous between 618' and 2400'.
Log on file and plotted.
Located on flank of Camelback Uplift.

2. Tamnahill No. 1, Beardsley. SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 25, T. 4 N., R. 2 W.

T. D. 3350'
Shows:
2540 Light oil
3280 Black shale saturated with oil, some gas.
Log on file.

* Sample

NAVAJO COUNTY

1. Adamana Oil and Land Company No. 1.

Sec. 4, T. 14 N., R. 20 E.

T. D. 3387'.
Shows:
1740-50 sh, oil
1940-50 sh, oil and gas
2250-2300 sd, oil
2480-2495 sd, oil
3380-(?) sd, ls, oil

Hole lost after fishing for tools. Never tested bottom show.
Log on file.
Located 2 miles N. of Richards Lake-Snowflake fault and 2 miles E. of anticline.

2. Black Canyon No. 1 Sec. 20, T. 16 N., R. 17 E.
T. D. 510'. ?
Core drill rig, took 7' cores of Coconino sandstone, which lie on ground near rig.
No shows on record.
No log on file.
Surface - Coconino Ss.
Located N. of Richards Lake-Snowflake fault on W. flank of anticline.
3. Great Basin Oil Company No. 1. Fuller (E. 5. Taylor). Sec. 21, T. 17 N., R. 20 E.
T. D. 4675'.
Shows:
1925-35 sd, salt water, gas.
3590-96 ls, oil
3685-3870 arkosis sd, oil on tools, water.
Correlations vague, but bottom hole may be Cambrian.
Log on file and plotted.
Supposedly located on structure by Dorsey Hager, but proved to be off structure.
4. Holbrook Oil Company No. 1. Sec. 23, T. 15 N., R. 18 E.
T. D. 2400' in 1922.
Deepened as Jerome-Navajo Drilling Company to 3775' in 1925.
Show gas?
No log on file.
Located on structure? Doubtful
5. Hopi Oil Company No. 1. Sec. 21, T. 15 N., R. 19 E.
T. D. 2500'
No log on file.

YAVAPAI COUNTY

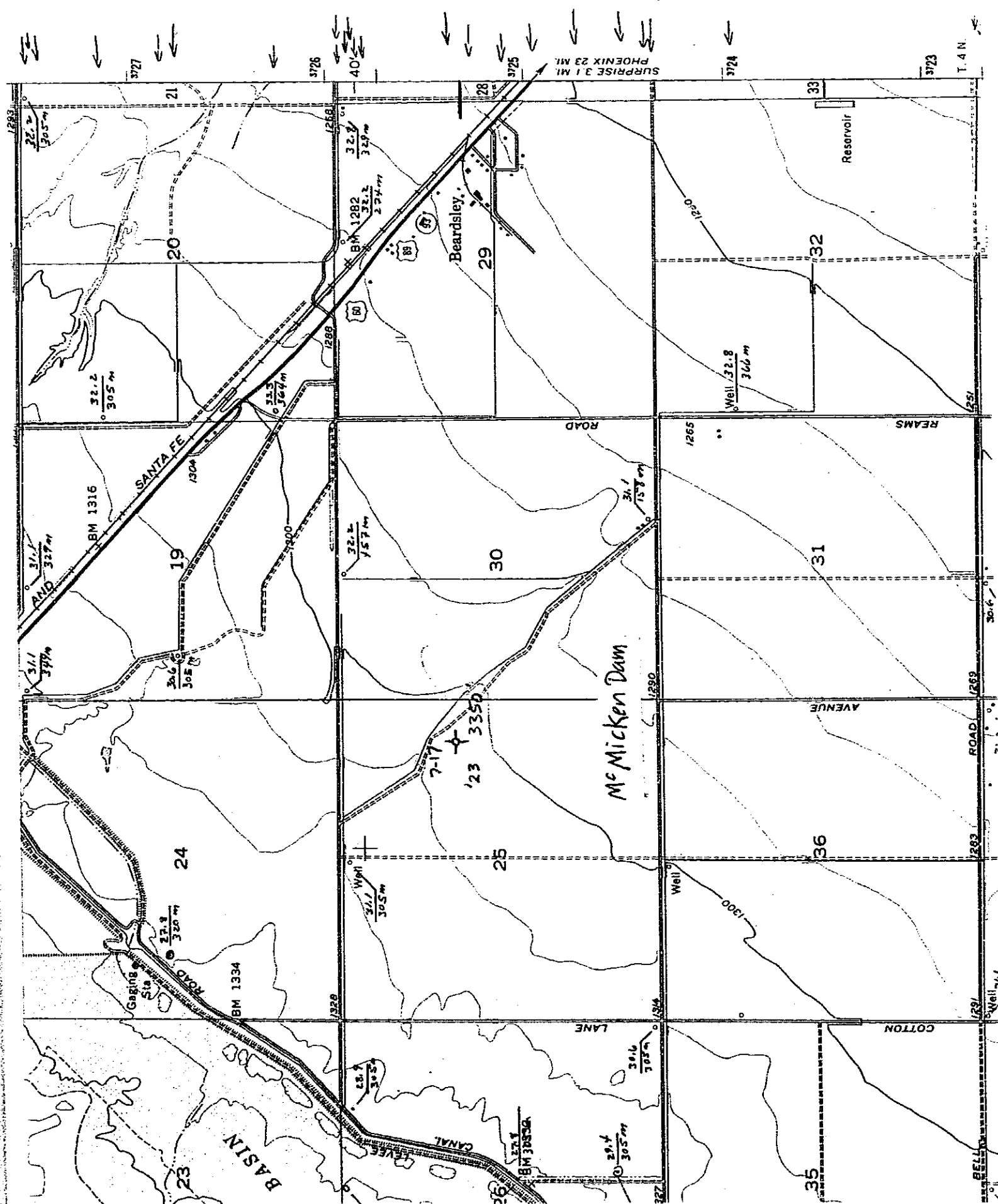
1. Arizona-Verde Oil Company. NW¹ Sec. 14, T. 13 N., R. 5 E.
T. D. 1625'.
Bottomed in igneous rock.
Correlation: 0-250'; Redwall ls ?
Log on file
2. Arizona-Verde Oil Company. NW¹ Sec. 9, T. 13 N., R. 5 E.
T. D. 1225'.
Bottomed in igneous rock.
Log on file.

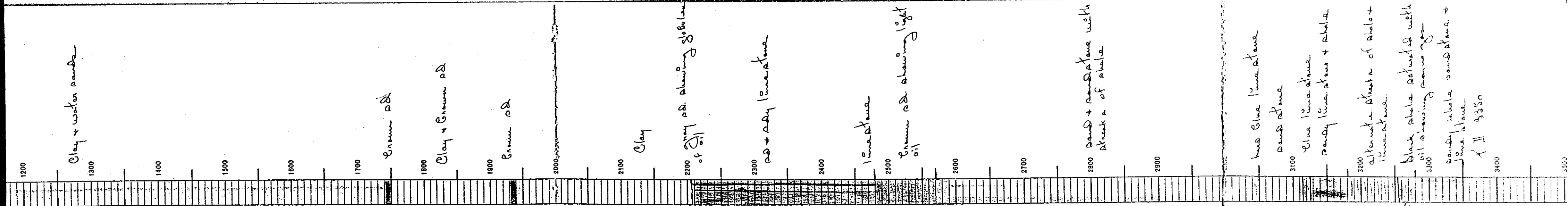
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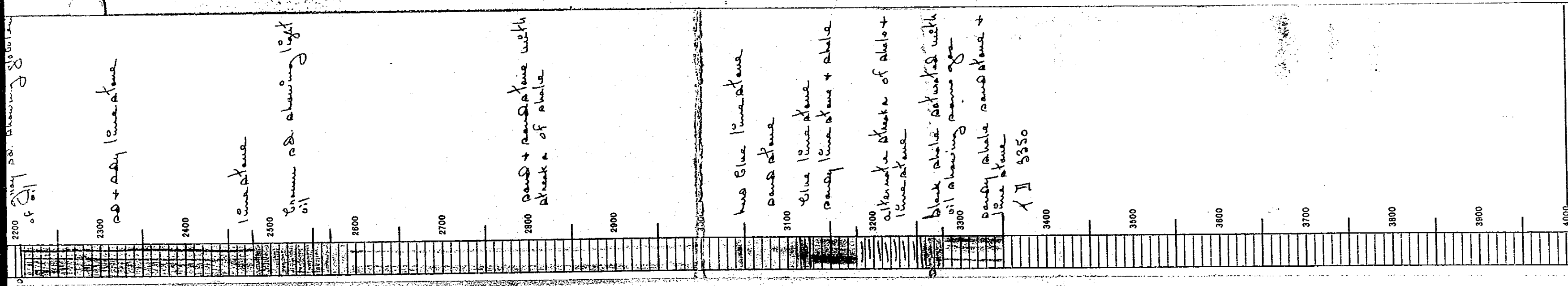
3. Chino Valley Oil and Mining Company No. 1.
Sec. 27, T. 18 N., R. 2 W.
Drilled 1913
T. D. 1800' 880.
No log on file.
Surfaces: Redwall ls.
Located on NW trending anticline in Redwall ls.

YUMA COUNTY

1. J. R. Loftus No. 1 (Stovall) NW $\frac{1}{4}$ Sec. 4, T. 8 S., R. 13 W.
Commenced
Completed
T. D. 2360'.
Temperatures:
2405-45 110°
2500 120°
2545 140°
Shows: Black mud at 2545-50', methane gas.
Log on file and plotted. No correlations.







1804 - 1885
1885 - 1892
1892 - 1930
1930 - 1937
1937 - 1940
1940 - 1943
1943 - 1946
1946 - 1949
1949 - 1952
1952 - 1955
1955 - 1958
1958 - 1961
1961 - 1964
1964 - 1967
1967 - 1970
1970 - 1973
1973 - 1976
1976 - 1979
1979 - 1982
1982 - 1985
1985 - 1988
1988 - 1991
1991 - 1994
1994 - 1997
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2000 - 2003
2003 - 2006
2006 - 2009
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2015 - 2018
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2159 - 2162
2162 - 2165
2165 - 2168
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2171 - 2174
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2192 - 2195
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2198 - 2201
2201 - 2204
2204 - 2207
2207 - 2210
2210 - 2213
2213 - 2216
2216 - 2219
2219 - 2222
2222 - 2225
2225 - 2228
2228 - 2231
2231 - 2234
2234 - 2237
2237 - 2240
2240 - 2243
2243 - 2246
2246 - 2249
2249 - 2252
2252 - 2255
2255 - 2258
2258 - 2261
2261 - 2264
2264 - 2267
2267 - 2270
2270 - 2273
2273 - 2276
2276 - 2279
2279 - 2282
2282 - 2285
2285 - 2288
2288 - 2291
2291 - 2294
2294 - 2297
2297 - 2300

FORM NO. 794 - For Sale by Ross-Martin Co., Tulsa

TANNEHILL BEARDSLEY

• **Not**

S. 25	T. 4N	R. 2W
-------	-------	-------

COMPLETED	1923	PRODUCTION	D4A
COMPLETED	JUNE	CABLE	
ELEVATION	#1305	ROTARY	

REMARKS:

Surface

02531-B (16/87)
caliche y earth
Havel caliche

10/12/2015

Caliche 4
204602

happy day

fine cuts, d

caliche

caliche

Wt sand

1981 12/24

clean cut

collective

Sandy clay

Con (1, 2)

con: 1: 86.

with same!

we find

1959

red clay

02531-8 (d/67)

Red clay

Rec'd

$\log_{10} x = -\log_{10} \frac{1}{x}$

Red sandy clay

use's in hand

Red! Red!

James A. H. [unclear]

Jobs are hard!

DEPTH	DESCRIPTION	REMARKS
0	Hard caliche	
100	Sandy clay	
200	Caliche & Cobble	
300	Sandy clay	
400	fine with sd	
500	Caliche	
600	Caliche	
700	light sand red clay	
800	clean sandy clay	
900	Caliche	
1000	Sandy clay	
1100	Caliche	
1200	Caliche	
1300	light sand wet clay	
1400	brown clay	
1500	red clay	
1600	Red clay	
1700	Red clay - sandy	
1800	Red sandy clay	
1900	Gray with sand	
2000	Red clay	
2100	Gray with sand sandy	
2200	Red clay	
2300	Clay wash	
2400	Red sandy clay	
2500	Red	
2600	Gumbo	
2700	black gumbo	
2800	black gumbo	
2900	red clay	
3000	Red sandy clay	
3100	brown sandstone	
3200	brown ss	
3300	brown sand	
3400	red clay	
3500	brown sand	
3600	red gumbo	
3700	red gumbo	
3800	red clay	
3900	red sand	
4000	red gumbo	
4100	black gumbo	
4200	red gumbo	
4300	Red clay	
4400	Red clay	

Depth (ft)	Soil Description	Notes
17.00	Red clay	
18.00	Red sandy clay	
19.00	Brown sandstone	
20.00	Brown ss	
21.00	Brown sand	
22.00	Red clay	
23.00	Brown sand	
24.00	Red gumbo	
25.00	Red clay	
26.00	Red sand	
27.00	Red gumbo	
28.00	Black gumbo	
29.00	Red gumbo	
30.00	Red clay	
31.00	Red sand	
32.00	Red gumbo	
33.00	Black gumbo	
34.00	Red gumbo	
35.00	Red clay	
36.00	Red sand	
37.00	Red gumbo	
38.00	Black gumbo	
39.00	Red gumbo	
40.00	Red clay	
41.00	Red sand	
42.00	Red gumbo	
43.00	Black gumbo	
44.00	Red gumbo	
45.00	Red clay	
46.00	Red sand	
47.00	Red gumbo	
48.00	Black gumbo	
49.00	Red gumbo	
50.00	Red clay	
51.00	Red sand	
52.00	Red gumbo	
53.00	Black gumbo	
54.00	Red gumbo	
55.00	Red clay	
56.00	Red sand	
57.00	Red gumbo	
58.00	Black gumbo	
59.00	Red gumbo	
60.00	Red clay	
61.00	Red sand	
62.00	Red gumbo	
63.00	Black gumbo	
64.00	Red gumbo	
65.00	Red clay	
66.00	Red sand	
67.00	Red gumbo	
68.00	Black gumbo	
69.00	Red gumbo	
70.00	Red clay	
71.00	Red sand	
72.00	Red gumbo	
73.00	Black gumbo	
74.00	Red gumbo	
75.00	Red clay	
76.00	Red sand	
77.00	Red gumbo	
78.00	Black gumbo	
79.00	Red gumbo	
80.00	Red clay	
81.00	Red sand	
82.00	Red gumbo	
83.00	Black gumbo	
84.00	Red gumbo	
85.00	Red clay	
86.00	Red sand	
87.00	Red gumbo	
88.00	Black gumbo	
89.00	Red gumbo	
90.00	Red clay	
91.00	Red sand	
92.00	Red gumbo	
93.00	Black gumbo	
94.00	Red gumbo	
95.00	Red clay	
96.00	Red sand	
97.00	Red gumbo	
98.00	Black gumbo	
99.00	Red gumbo	
100.00	Red clay	

name
titles
image

EXPLORATION

file 7-17

Clues point to oil in Arizona's deep Tertiary

Wittmann area exploratory drilling

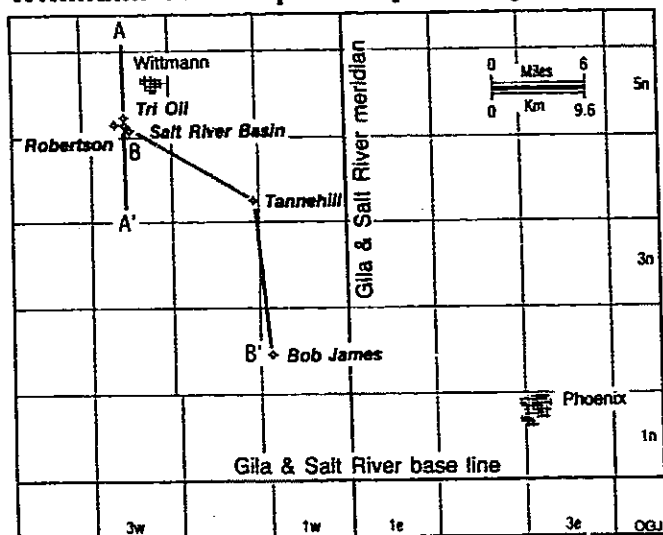


Fig. 1

Wittmann area features*

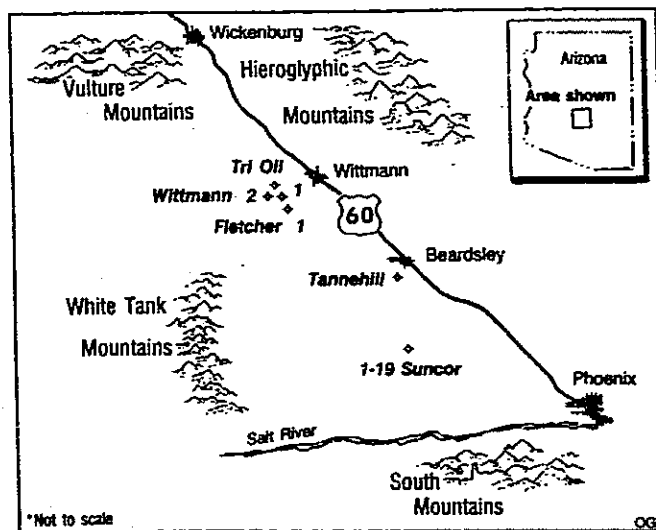


Fig. 2

Selected wells, Wittmann area, Maricopa County, Ariz.

Operator	Well	Location	Year drilled	Total depth, ft	Formation at total depth	Remarks
Tannehill	1 Beardsley	SE NE 25-4n-2w	1923	3,350	Tertiary sediments*	Shows in two sands, no tests
Robertson	1 Wittmann	NE NE 33-5n-3w	1944	4,280	Volcanic rock†	1,600 ft oil recovered in test
Robertson	2 Wittmann	NE NW 33-5n-3w	1946	4,970	Volcanic rock†	Shows at 4,850 ft, no tests
Salt River	1 Fletcher	SW NW 34-5n-3w	1981	3,980	Precambrian schist	No shows or tests
Tri Oil	78-28 State	SE SE 28-5n-3w	1982	4,520	Precambrian schist	Swabbed trace to show of oil
Bob James	1 Suncor	NE NE 19-2n-1w	1988	4,000	Tertiary salt	Show at 3,000 ft, no tests

*Probable. †Questionable.

Steven L. Rauzi
Arizona Oil & Gas
Conservation Commission
Phoenix

Evaluation of several wells near Wittmann, Ariz., suggests the need for additional drilling in the deep Tertiary basins of central Arizona.

In one of the earlier wells, 1 Wittmann, the driller reported as much as 1,600 ft of light oil in a test. Unfortunately, an unsuccessful water shut-off attempt prevented this well's completion.

Later drilling in 1981 and 1982 yielded mixed results and provided information on rotary drilling conditions and costs and basin stratigraphy.

Four of the wells described were drilled on private land and the fifth on a state lease.

Federal land is found in several, mostly isolated, areas in the valley but predominates in the mountains and to the west. One small federal tract, surrounded by private land, over a large salt deposit was picked up in the March 1991 U.S. Bureau of Land Management lease sale.

State land is available on a non-competitive basis and carries a 5 year term with a one eighth royalty on any production.

A major concern is the apparent lack of a good oil and gas source rock in the area. However, a thick section of deeply buried salt at the southern end of the valley is recognized by some to be

just such a source.

In the most recent well, the 1-19 Suncor, more than 2,000 ft of salt was drilled, but no well has penetrated the base of the salt.

Seismic data over the salt suggest that it may extend to a depth of 12,000-15,000 ft. On a more regional basis, gravity and magnetic data show this valley to be one of the deepest in the southern part of Arizona.

The current report provides a summary of the data available in the well files and sample repository of the Arizona Oil & Gas Conservation Commission.

The well data are listed (see table), and the location of the wells and Sections A-A' and B-B' in Maricopa County are shown (Fig. 1).

Wittmann area

The Wittmann area is a broad, flat valley floored with Tertiary sediments.

The valley is both topographic and structural in that it is bounded by upfaulted, erosionally subdued mountains of Precambrian to Tertiary crystalline and metamorphic rocks.

The Vulture and Hieroglyphic mountains bound the area on the north and northeast, the White Tank Mountains are on the southwest, and the South Mountains are on the southeast. The Salt River drains the area at the south end of the valley (Fig. 2).

The Tertiary sediments just southwest of Wittmann are about 4,000 ft thick. They thicken to more than 11,000 ft 20 miles to the southeast, where the Tertiary section includes a large volume of relatively pure nonmarine salt (Fig. 4).

The valley slopes gently southward toward the Salt River. Elevations of the valley floor range from 1,600 ft near Wittmann to 900 ft at the river.

Elevations exceed 4,000 ft in the Vulture and Hieroglyphic Mountains, 3,500 ft in the White Tank Mountains, and 2,500 ft in the South Mountains.

These ranges contain Proterozoic schist similar to and herein correlated with the schist in the Tri Oil and Salt River Basin wells near the town of Wittmann (Fig. 1).

Early wells

The Tannehill 1 Beardsley was the earliest well to be drilled in the study area.

This well was drilled in 1923 and is located near the small town of Beardsley in SE NE 25-4n-2w (Fig. 1).

Tannehill drilled the 1 Beardsley with cable tools. His driller reported a gray sand with globules of oil at 2,208-10 ft. He also reported shows in a brown sand at 2,518-40 ft.

A black shale saturated with oil and showing gas was reported at 3,252-80 ft. The TD of the 1 Beardsley is 3,350 ft in probable Tertiary sediments (Fig. 4).

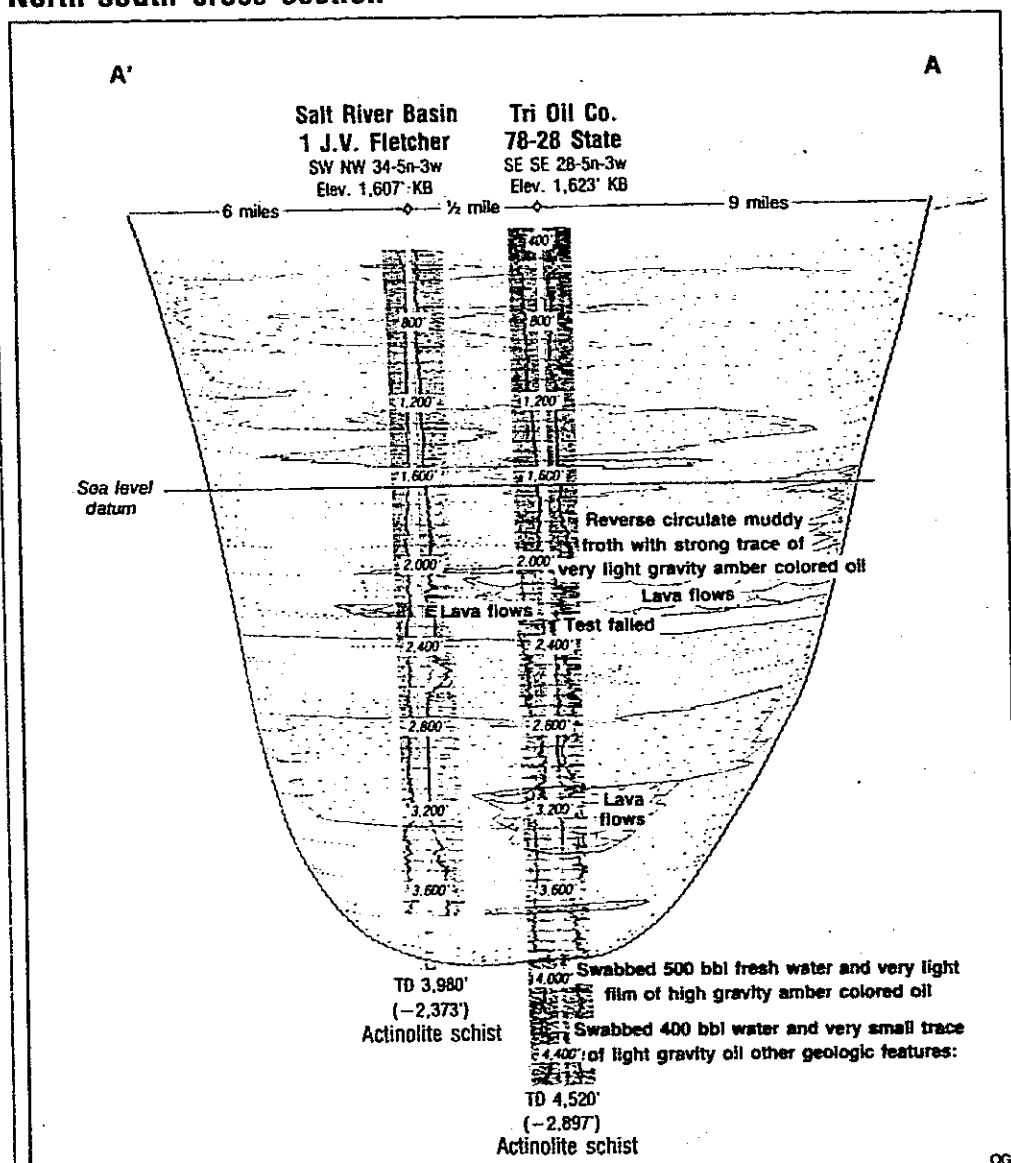
A note on the driller's log records the static water level in the hole. It stood at 138 ft and was drawn down to 183 ft after pumping.

J.J. Robertson drilled the first well near the town of Wittmann in 1944. His well, the 1 Wittmann, is located just southwest of Wittmann in NE NE 33-5n-3w (Fig. 1).

The logs, cores, and cuttings are not available for 1 Wittmann. However, the file on this well does contain the driller's recollection of the operation.

His account describes light oil recovered in a test and a show of oil in a conventional core. He claimed that this core was analyzed at the

North-south cross section



Tucson School of Mines, where it was considered to be of Permian age.

This driller, Lance Fletcher, provided the financial backing for the nearby 1 Fletcher well drilled in 1981. That he returned to finance this later well lends credence to his recollection of the test in the 1 Wittmann.

In a letter in the well files of the Arizona Oil & Gas Conservation Commission, Fletcher recalled the test as follows:

"A medium to strong blow was immediate, it became stronger until oil surfaced after about a minute."

He went on to report the amount of fluid recovered in the test: 1,600 ft of 36° gravity

oil and 1,600 ft of salt water. When the crew tried to shut off the water, they cemented the tubing in the hole.

The core description, the scenario of the test, and the tubing being cemented in the hole suggest that a light oil is trapped at this location.

That it was not developed was due to mechanical problems. Alternatively, these reports suggest that oil has migrated through the Wittmann area.

TD of the 1 Wittmann is reported to be at 4,280 ft in volcanic rock.

Robertson drilled the 2 Wittmann in 1946 in NE NW 33-5n-3w, about 1,500 ft west of the 1 Wittmann (Fig. 1).

He apparently drilled this well to re-enter the oil zone that was lost when tubing was cemented in the 1 Wittmann. However, it seems unusual to the author that he would have stepped out so far from the original hole.

The 2 Wittmann file contains a very general lithologic summary. It reports sand and gravel to 3,100 ft, conglomerate to 3,800 ft, and volcanic rock from 3,800 ft to TD 4,970 ft. It also records a show of oil from 4,650-60 ft in the volcanic rock. No tests are reported.

Modern drilling

Salt River Basin Joint Venture drilled the 1 Fletcher in 1981 in SW NW 34-5n-3w,

Northwest-southeast cross section

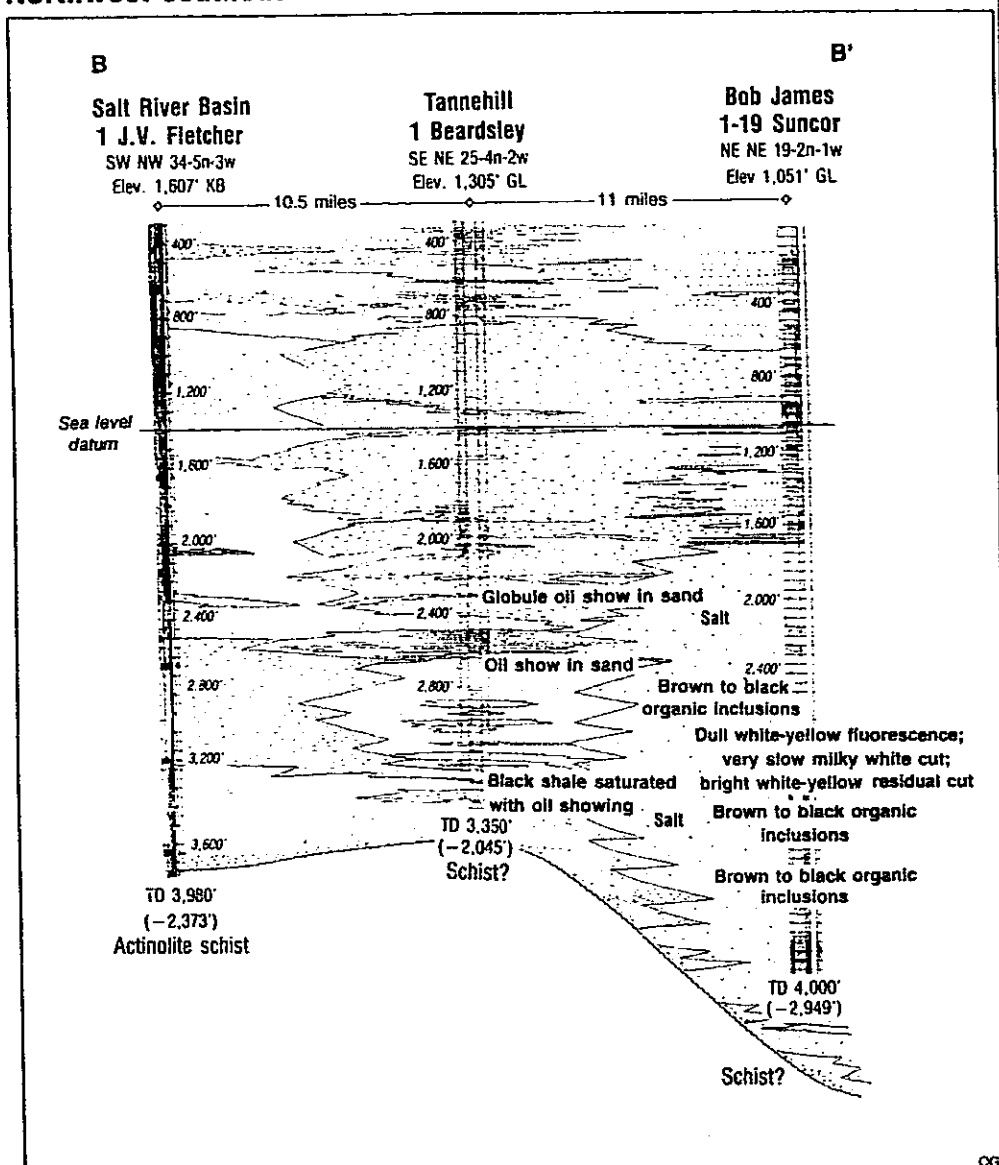


Fig. 4

control the inflow of water.

The operator admitted such and wrote that he had no doubt that he had failed to find and produce a significant oil and gas saturation in this well.

The Bob James 1-19 Suncor well is in NE NE 19-2n-1w (Fig. 1).

This well is included here because it provides information on the probable source for the oil and gas reported in the wells drilled near the towns of Wittmann and Beardsley.

The 1-19 Suncor was drilled in 1988 to test sand objectives below a large deposit of salt near Luke Air Force Base (Fig. 4).

The Suncor well penetrated salt at 1,720 ft and was still in salt at TD 4,000 ft.

The mud log records sandstone, claystone, and several beds of anhydrite overlying the salt. It also records several thin beds of orange to brown claystone within the salt and a thin bed of black shale encased in salt at 3,950 ft.

Several zones of brown to black organic inclusions are reported in the salt, and a particularly interesting zone of very slightly calcareous to clayey siltstone is reported at 3,000 ft.

This siltstone has a dull white to yellow fluorescence with a very slow milky white cut. The siltstone also has a bright white to yellow residual cut but no odor or visible stain.

Since the Suncor well was still in salt at TD, its primary objective of testing sands below the salt was not accomplished. Testing of the supposed sands is still a valid objective.

Additional objectives include salt overhangs, stratigraphic intertonguing around the periphery of the salt, and faulted wedges of sediment within the salt.

This well offers a probable source for the oil and gas reported in the several wells in the Wittmann area.

Possible oil source rocks

The oil and gas shows reported in the Tannehill, Wittmann, and Tri Oil Co. wells indicate that oil and gas are

about 1,350 ft southeast of 1 Wittmann (Fig. 1).

Lance Fletcher, the previously mentioned driller on the 1 Wittmann well, was the lease holder and financier for the 1 Fletcher.

The mud and electric logs record a continuous sequence of fine- to coarse-grained, varicolored alluvium and colluvium. A 50 ft thick volcanic flow is present at 2,200 ft.

The interval 2,700-3,400 ft is notably silty and clayey, indicating the development of an effective seal in this part of the basin. Precambrian actinolite schist was penetrated at 3,940 ft, and the well bottomed in schist at 3,980 ft (Figs. 3, 4). No shows or

tests are reported.

In 1982, the Tri Oil 78-28 State was the most recent well to be drilled in the vicinity of Wittmann (Fig. 1). The 78-28 State is in SE SE 28-5n-3w, about 1,350 ft due north of 1 Wittmann and about one half mile northwest of 1 Fletcher.

The operator ran dual-induction, sonic, neutron, and dipmeter logs and set and cemented 7 in. casing to 4,517 ft. He then perforated and attempted to test several zones.

The first test at 2,020-21 ft failed because of a loose joint.

The second test at 2,337-38 ft recovered seven stands of hole fluid in 1 hr from an-

other loose joint.

The third test at 4,216-17 ft recovered 3,800 ft of fresh water in 41 min. It had a final flowing pressure of 1,597 psi.

After these three tests, 221 holes were shot across two large intervals, 2,024-2,343 ft and 3,935-4,514 ft.

The well was then fractured using 52 tons of sand. Swabbing recovered fresh water with strong traces to slight shows of gas and light oil.

Unfortunately, the large interval of perforated pipe made it difficult for the operator to tell which zone in the well was effectively stimulated. Tri Oil could not determine which perforations were yielding the oil, and it failed to

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Rauzi

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present in this area.

At the least, these shows record a period of oil and gas migration through the basin. If a potential source rock for oil and gas can be described, then the reported shows in these wells take on a greater significance.

At least two possible source rocks for oil and gas have been identified. The first is the "black shale saturated with oil" in the Tannehill well.

The second, and more likely source, is the thick section of salt, and intimately associated sediments, in the Suncor well (Fig. 1).

In fact, the shows in the Wittmann area wells suggest that oil migrated out of and away from the deeply buried salt at Luke Air Force Base. At least 20 miles of oil migration is indicated.

Luke salt

The salt at Luke, or Luke salt, is at least Miocene in age.

It is overlain by basalt that has been age dated at about 10.5 million years.¹

The average bromine content of the Luke salt is about 2 ppm. Values of less than 30 ppm bromine tend to represent nonmarine salt, and the Luke salt deposit is probably of lacustrine or playa origin.² The sheer volume of relative-

ly clean salt at Luke tends to suggest a lacustrine deposit.

The organisms in saline lakes normally include a narrow range of species that grow in remarkable abundance.³ These authors cite several examples of abundant biotas in saline lakes.

For example, they describe saline lakes that provide sufficient food for enormous flocks of flamingos, in some cases a million or more birds.

Most species of flamingos obtain their food from organic rich bottom muds. These saline lakes must therefore maintain a high productivity of phytoplankton, which settle and are incorporated into the bottom muds.

Under the right conditions, these muds, along with significant amounts of bird droppings, can be preserved and become good source rocks for oil and gas.

Like modern saline lakes, the lake, or lakes,⁴ in which the Luke salt was deposited could very well have sustained an abundance of organisms that accumulated as organic rich bottom muds.

In the case of Luke, organic rich muds may have been concentrated during volcanic-associated phytoplankton "blooms." Thus extra-rich muds in the Luke salt could correlate with periods of increased volcanic activity.

The "oil-saturated black shale" reported in the Tannehill well could represent just such a relationship. Salt-associated source beds may well be a significant factor not just in the oil and gas play of the Wittmann area but in the entire Phoenix basin as well.

Heat source, stratigraphic trap
Gravity and magnetic data suggest that the Luke salt is at least 10,000 ft thick.^{2,5}

Seismic data suggest that it may extend to a depth of 12,000-15,000 ft.⁶ These depths are sufficient to generate oil and gas.

Sufficient heat and pressure necessary to generate oil and gas from salt-associated source beds also may have been provided by Tertiary intrusion and volcanism. Such was the case at Dinehbi-Keyah field in northeastern Arizona.

There, a Tertiary sill was intruded into Pennsylvanian carbonate rocks. That sill was intruded into Pennsylvanian carbonate rocks. That sill has produced more than 17 million bbl of oil.⁷

Concrete evidence of such intrusive relationships has not been documented in the study area, but a sill intruded into either the black shale described in the Tannehill well or organic-rich muds associated with the Luke salt offers the same possibility for stratigraphic traps in the Wittmann area.

Conclusion

The 1 Wittmann was reported to have produced 1,600 ft of light oil and 1,600 ft of salt water in a cased hole test.

Unfortunately, mechanical problems and an unsuccessful water shut-off attempt prevented development of the Wittmann well.

Shows of oil also were reported in two sands in the Tannehill Beardsley well. If these sands pinch out laterally into clay, stratigraphic traps are possible in the undrilled parts of this basin.

Two possible sources for

oil and gas in the Wittmann area include the "oil-saturated black shale" in the Tannehill well and the thick section of Miocene salt in the Suncor well.

The salt in the Suncor well may serve as a trapping mechanism to oil and gas below the salt.

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KANSAS

Caribou Resources, Denver, has staked eight 2,000 ft geological wildcats in Pomona and North Pomona fields of Franklin County.

Targeting Cambro-Ordovi-

cian Arbuckle, the wells are in 35- and 36-15s-18e; 13-, 24-, and 25-16s-17e; and 8-, 16-, 18-, and 20-16s-18e.

Sites are 5-7 miles west and northwest of Ottawa.

KENTUCKY

Equitable Resources Exploration Co., Kingsport, Tenn., reported completing two western Kentucky discoveries during 1990.

The K10001 John Hopkins Hospital, 16-K-27, Hopkins County, pumped 50 b/d of oil from Mississippian Cypress perforations at 2,171-91 ft. The discovery opened East Earle Creek field.

Total depth is 4,243 ft. The well encountered noncommercial gas shows in New Albany at 3,820-46 ft and 3,968-4,052 ft, Petroleum Information reported.

Equitable has drilled five other wells nearby. It plugged

two, completed one as an oil producing well, and was placing the other two on the pump. It has also staked a seventh test in the area.

Equitable also completed K10002 Andrew Mast, 7-K-18, 4 miles north of Marion in Crittenden County.

It flowed 40 Mcfd of gas from Devonian New Albany shale at 2,260-2,458 ft and 2,518-2,620 ft. Total depth is 2,841 ft.

Well site is about 6 miles northwest of Tribune field, which produces oil from Mississippian McClosky.

The discovery well is more than 30 miles northwest of

BOND NO. _____

AMOUNT _____

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